INFECTION PREVENTION & CONTROL PRINCIPLES IN ICU

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2023

INFECTION PREVENTION & CONTROL PRINCIPLES IN ICU

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2019

INFECTION PREVENTION GOALS

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- Goal of infection control is to **PREVENT** the spread of infectious diseases.
- IPC OF NNGH maintain an ongoing program designed by the hospital to reduce the risk of the health care Associated infection (HAIS) in patients,visitors and health care workers through surviellence and continous infection control education and training.

BICSL BASIC INFECTION CONTROL SKILL LICENCES

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PURPOSE :

- To improve best practice of infection prevention and control procedures in the health care settings.

- To decrease HAIs among health care employee, patients & visitors.

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- Respirator Fit Test (**N95** mask)
- Hand Hygiene :

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- Steps of Hand Hygiene
- 5 moments of **HH**

- **PPE** – Personal Protective Equipment
  Donning (putting-on)
  Doffing (Removing)

VACCINATION OF :

- **INFLUENZA Vaccine** – 1 year
- **MENINGITIS Vaccine** – 5 years

SAFE INJECTION PRACTICES:

One needle

One Syringe

One Medication

Do not recap needle (needle stick injury)

STANDARD PRECAUTIONS:

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- **Standard precautions** are designed to reduce the risk of transmission of microorganisms from both recognized and unrecognized sources of infection in hospitals.

Standard precautions apply to blood, all body fluids (secretions and excretions except sweat regardless of whether they contain blood), non-intact skin and mucous membranes.

HAND HYGIENE (HH) PROCEDURE:

- The basic requirement for infection prevention and control strategies that will reduce spread of microorganisms.
- Methods of HH involve either antibacterial soap and water or alcohol-based waterless hand rub.
- HH is used to remove or kill microorganisms that colonize the hands.

THE WHO'S 5 MOMENTS FOR HH:

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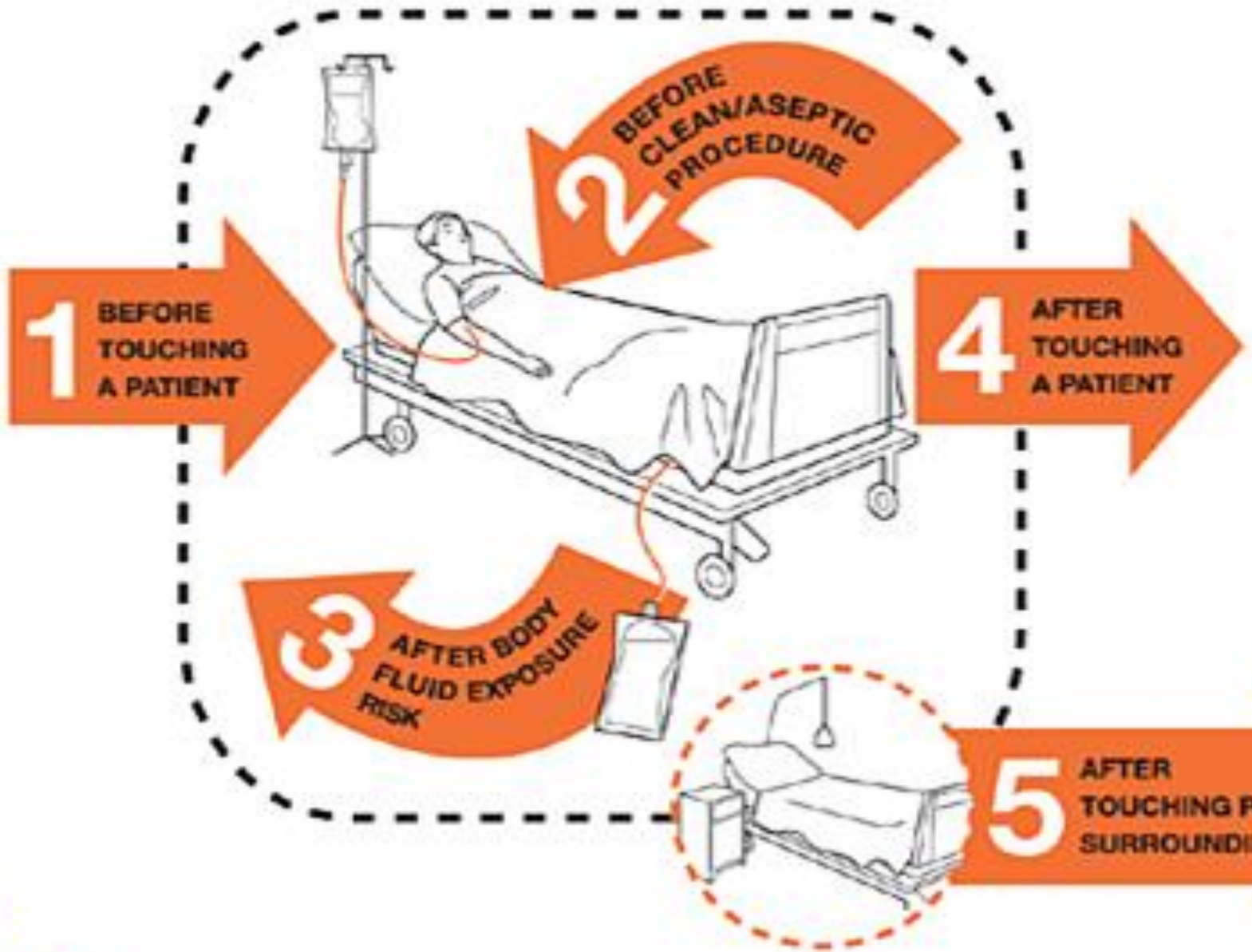
1. Before patient contact
2. Before clean/aseptic tasks
3. After body fluid exposure risk
4. After patient contact
5. After contact with patient surroundings



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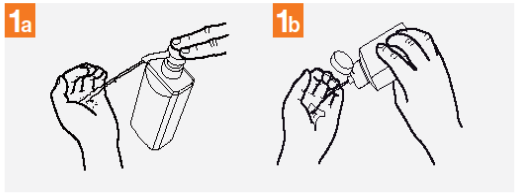
How to Handrub?

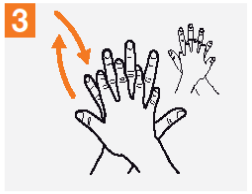
RUB HANDS FOR HAND HYGIENE! WASH HANDS WHEN VISIBLY SOILED

Duration of the entire procedure: 20-30 seconds



Apply a palmful of the product in a cupped hand, covering all surfaces;

Rub hands palm to palm;

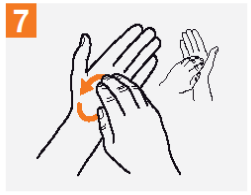


Right palm over left dorsum with interlaced fingers and vice versa;

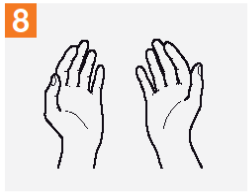
Palm to palm with fingers interlaced;

Backs of fingers to opposing palms with fingers interlocked;

Rotational rubbing of left thumb clasped in right palm and vice versa;



Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



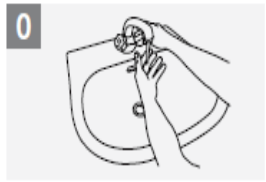
Once dry, your hands are safe.

World Health Organization | Patient Safety — A World Alliance for Safer Health Care | SAVE LIVES Clean Your Hands

May 2009

How to do Hand Wash:

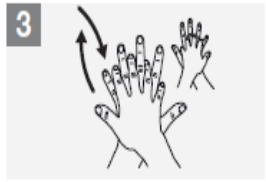
Duration 40-60 seconds



Wet hands with water;

Apply enough soap to cover all hand surfaces;

Rub hands palm to palm;



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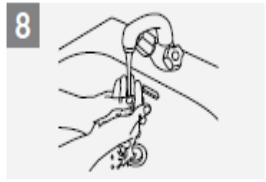
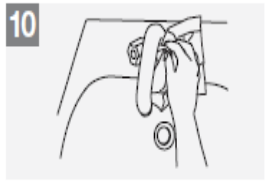


Rinse hands with water;

Dry hands thoroughly with a single use towel;



Use towel to turn off faucet;

Your hands are now safe.

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PERSONAL PROTECTIVE EQUIPMENT :

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- PPE is used to create a barrier between HCWs and patients, body substances, or surfaces.
- Use appropriate PPE (gloves/gowns/plastic aprons/eye protection) to prevent skin and mucous
- membrane exposure. Use one or more of these items based on the degree and risk of exposure.
- However, most routine patient care activities at the bedside do not require the use of PPE.

PERSONAL PROTECTIVE EQUIPMENT :

GLOVES

1. Wear gloves whenever in contact with blood, other body substances or contaminated items and surfaces and when in an isolation room.

2. Wear and change gloves between tasks/procedures on the same patient.

3. Remove gloves promptly after use and before touching clean items and environmental surfaces.

4. Perform hand hygiene immediately after removing gloves.

5. Use non-sterile gloves for examinations and other clean procedures, and use sterile gloves for sterile procedures. Refer to ***Aseptic Technique PP.***

6. Gloves are not to be worn after leaving the patient room or procedure area.

PERSONAL PROTECTIVE EQUIPMENT :

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GOWNS/ PLASTIC APRON :

1. Wear a gown/plastic apron to protect skin and clothing during procedures that may generate splashes or aerosolization of body substances and cause the soiling of clothes.
2. Securely fasten the tabs/ties to keep the gown/plastic apron in place while performing patient care activities in the patient room/procedure area.
3. Remove the gown/plastic apron by untying the tabs/ties and folding it away from you in an inside-out manner. Roll it into a ball and discard.
4. Change the gown/plastic apron for each patient and/or procedure.
5. Gloves/aprons are not to be worn after leaving the patient room or procedure area.

PERSONAL PROTECTIVE EQUIPMENT :

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MASKS (surgical or N95)

1. Wear a surgical mask (with protective eye/face wear) if splashing or aerosolization of blood or body fluids is expected.
2. Change mask between patients and sooner if mask becomes wet, moist or torn.
3. Wear an N95 mask when indicated to enter an airborne isolation room, and remove it only when outside of the room.
4. Surgical mask are not to be worn after leaving the patient's room or procedure area.
5. Surgical mask or N-95 mask are meant to be used as single use every after patient encounter.

PERSONAL PROTECTIVE EQUIPMENT :

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PROTECTIVE EYE/FACE WEAR :

1. Wear protective eye/face wear if required for combined protection from eye/face contamination by aerosolized body substances.
2. Wash and disinfect visibly soiled reusable face shields or protective eyewear prior to reuse, according to hospital policy.
3. Protective eyewear /face wear are not to be worn after leaving the patient room or procedure area.

PERSONAL PROTECTIVE EQUIPMENT :

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Sequence of donning and doffing of PPEs before entering and leaving a patient's room.

1. Don **PPEs in this order:**

- **Hand hygiene,**
- Gown,
- Surgical mask,
- Goggles/face shield
- Gloves

2. **Doff PPEs in this order:**

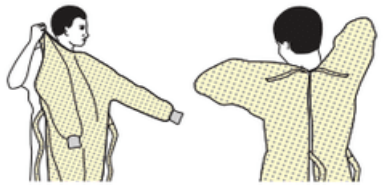
- Gloves,
- **Hand hygiene,**
- Goggles/face shield,
- Gown
- **Hand hygiene,**
- Surgical mask
- **Hand hygiene**

SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

1. GOWN

- Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
- Fasten in back of neck and waist



2. MASK OR RESPIRATOR

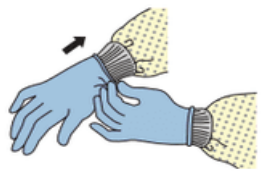
- Secure ties or elastic bands at middle of head and neck
- Fit flexible band to nose bridge
- Fit snug to face and below chin
- Fit-check respirator

3. GOGGLES OR FACE SHIELD

- Place over face and eyes and adjust to fit

4. GLOVES

- Extend to cover wrist of isolation gown



USE SAFE WORK PRACTICES TO PROTECT YOURSELF AND LIMIT THE SPREAD OF CONTAMINATION

- Keep hands away from face
- Limit surfaces touched
- Change gloves when torn or heavily contaminated
- Perform hand hygiene

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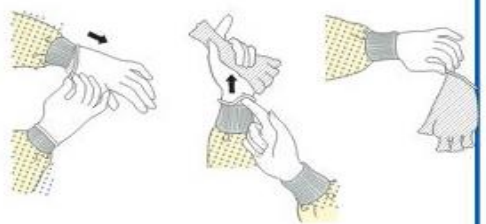
SEQUENCE FOR REMOVING PERSONAL PROTECTIVE EQUIPMENT (PPE)

Except for respirator, remove PPE at doorway or in anteroom. Remove respirator after leaving patient room and closing door.

1. GLOVES

- Outside of gloves is contaminated!
- Grasp outside of glove with opposite gloved hand; peel off
- Hold removed glove in gloved hand
- Slide fingers of ungloved hand under remaining glove at wrist
- Peel glove off over first glovet
- Discard gloves in waste container



2. GOGGLES OR FACE SHIELD

- Outside of goggles or face shield is contaminated!
- To remove, handle by head band or ear pieces
- Place in designated receptacle for reprocessing or in waste container

3. GOWN

- Gown front and sleeves are contaminated!
- Unfasten ties
- Pull away from neck and shoulders, touching inside of gown only
- Turn gown inside out
- Fold or roll into a bundle and discard

4. MASK OR RESPIRATOR

- Front of mask/respirator is contaminated — DO NOT TOUCH!
- Grasp bottom, then top ties or elastics and remove
- Discard in waste container

PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS BECOME CONTAMINATED AND IMMEDIATELY AFTER REMOVING ALL PPE

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HANDLING/DISPOSAL OF CONTAMINATED ITEM

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NEEDLES/ SHARPS :

a. Dispose used sharp items into an approved puncture-resistant container immediately after use, at the point of use, or as close to point of use, as possible.

b. Do not place used sharp items on any environmental surface.

3. HANDLING/DISPOSAL OF CONTAMINATED ITEMS

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- Do not **RECAP** or manipulate needles using both hands because this increases the risk of injury. If recapping or manipulating the needle is deemed essential, then use either
- one-hand “scoop” technique or a mechanical device designed to hold the needle sheath.

3. HANDLING/DISPOSAL OF CONTAMINATED ITEMS

- Before attempting to remove needles from reusable aspirating syringes, recap them with either one-handed “scoop” technique or a mechanical device designed to hold the needle sheath.
- Keep sharp containers **CLOSED** at all times.
- Discard sharp containers when ***¾ full*** or When ***odor arises*** or **after one (1) month** and remove for incineration.

PUNCTURE-RESISTANT CONTAINER FOR SHARPS

ONE HAND TECHNIQUE

3. HANDLING/DISPOSAL OF CONTAMINATED ITEMS

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2. LINEN :

- Handle and transport linen in a manner that will prevent skin/mucous membrane exposure and

  contamination of clothing or transferring microorganisms to other patients or the environment.
- Place wet/heavily soiled linen in a designated impermeable bag and close the bag securely or wrap wet linen in another piece of linen to avoid soaking of the bag.
- ***Refer to Laundry Policy & Procedure.***

Post injury / exposure protocol

- ✓ Don't PANIC !!!
- ✓ Don't squeeze the injured site
- ✓ Wash with soap and water immediately
- ✓ Report to the casualty & provide,

(i) Full history of injury or exposure

(ii) History of Hepatitis B immunization

(iii) Blood for testing

3. HANDLING/DISPOSAL OF CONTAMINATED ITEMS

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3. Medical waste

- Place biomedical waste in identifiable (color-coded) bags or appropriate containers.
- Securely tie or close bags/containers and remove for appropriate disposal.

Refer to Management of Infectious Waste Policy & Procedure.

3. HANDLING/DISPOSAL OF CONTAMINATED ITEMS

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4. Patient care equipment :

- Handle used patient care equipment in a manner that prevents skin and mucous membrane exposure, contamination of clothing and transfer of microorganisms to other patients or the environment.
- Commonly used equipment must be clean and disinfected between patients.

3. HANDLING/DISPOSAL OF CONTAMINATED ITEMS

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- Do not reuse single-use items.
- Remove organic material from critical and semi-critical instruments/devices using recommended cleaning agents before transfer to CSSD for high-level disinfection or sterilization.
- Ensure that reusable equipment is properly transported in leak-proof containers to CSSD for reprocessing before use with another patient.

3. HANDLING/DISPOSAL OF CONTAMINATED ITEMS

4. Patient care equipment

- Handle used patient care equipment in a manner that prevents skin and mucous membrane exposure, contamination of clothing and transfer of microorganisms to other patients or the environment.
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- Ensure that reusable equipment is properly transported in leak-proof containers to CSSD for reprocessing before usewith another patient.

4. LABORATORY SPECIMENS :

- Wear gloves before obtaining laboratory specimens.
- Place laboratory specimens in designated containers and seal appropriately.
- Remove gloves and perform hand hygiene once all laboratory specimens are in the appropriate containers.
- Label containers with appropriate patient data.

4. LABORATORY SPECIMENS :

- Transfer to the laboratory in an upright position as much as possible and as promptly as possible.
- Ensure no leakage of the laboratory specimens.
- Ensure that the requisition has the complete information as this is critical for laboratory analysis and clinical interpretation.

5. ROOM CLEANING

1. Rooms should be cleaned daily and after patient discharge.

2. Cleaning is required as per housekeeping policies.

6. PATIENT PLACEMENT :

Place patients who pose as risk of transmission to others (e.g., those with uncontained secretions, Excretions, or wound drainage) in single-patient rooms when available. If a single room is not available, ensure contact isolation precautions are applied in a shared room.

7. COUGH ETIQUETTE :

1. Cover nose and mouth with a tissue when coughing or sneezing.

2. Dispose used tissue in the nearest waste receptacle.

3. Clean hands with soap and water or antiseptic solution or with an alcohol-based hand rub after

touching respiratory secretions or handling contaminated objects.

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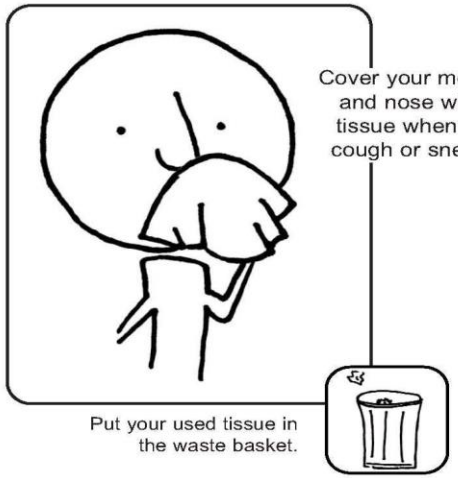
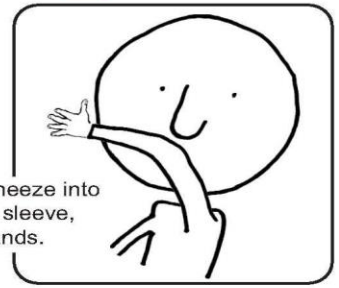
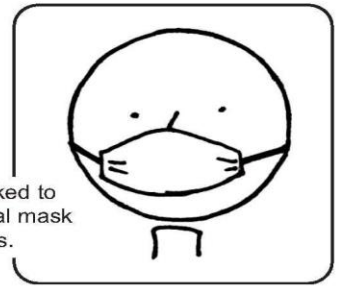
Cover your Cough



Cover your mouth and nose with a tissue when you cough or sneeze *or* cough or sneeze into your upper sleeve, not your hands.



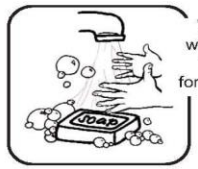
Put your used tissue in the waste basket.



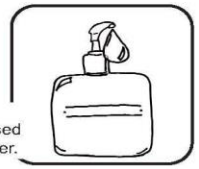
You may be asked to put on a surgical mask to protect others.

Clean your Hands

after coughing or sneezing.



Wash hands with soap and warm water for 20 seconds *or* clean with alcohol-based hand cleaner.



8. FOOD AND DRINKS AT THE WORK STATION :

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- Consumption of food and drinks in clinical areas with potential for exposure to blood or other

- infectious material or where the potential for contamination of work surfaces exist are prohibited.

- However, water bottles with protective lids, properly labeled with the employees name are allowed.

TRANSMISION BASED PRECAUTIONS

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THREE

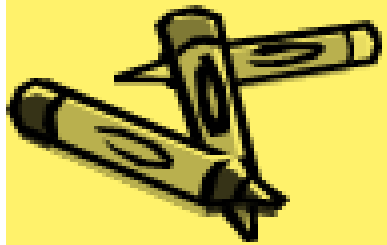
1-AIRBORNE

2-DROPLET

3-CONTACT

Airborne Precautions

- Airborne droplets or dust particles containing infectious agents can remain suspended in the air for long periods of time
- Air currents can blow them long distances
- Can be emitted during talking, sneezing, coughing and whispering
- Examples: Mycobaterium tuberculosis, Rubeola (measles) and Varicella (chicken pox)



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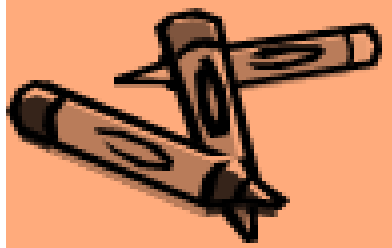
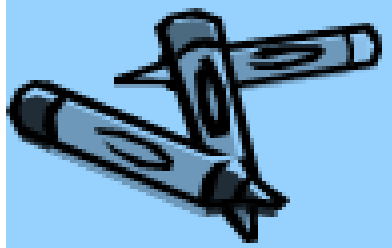
Droplet Precautions

- Propelled short distances through the air
- Deposited on host's conjunctiva, nasal mucosa or mouth
- Can be emitted during talking, sneezing, coughing and during procedures like suctioning and bronchoscopy
- Examples: streptococcal pharyngitis, mumps, influenza, rubella, some some pneumonias, meningitis and sepsis



Contact Precautions

- Most important and frequent mode of transmission for nosocomial infections
  - Nosocomial = originates/takes place in hospital or other health care facility
  - Nosocomial infection = the client gets it as a result of being in the health care facility
- Example: herpes (HSV), impetigo, scabies, some gastrointestinal, respiratory, skin and wound infections
- Direct-contact & Indirect-contact transmission



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ASEPTIC TECHNIQUE

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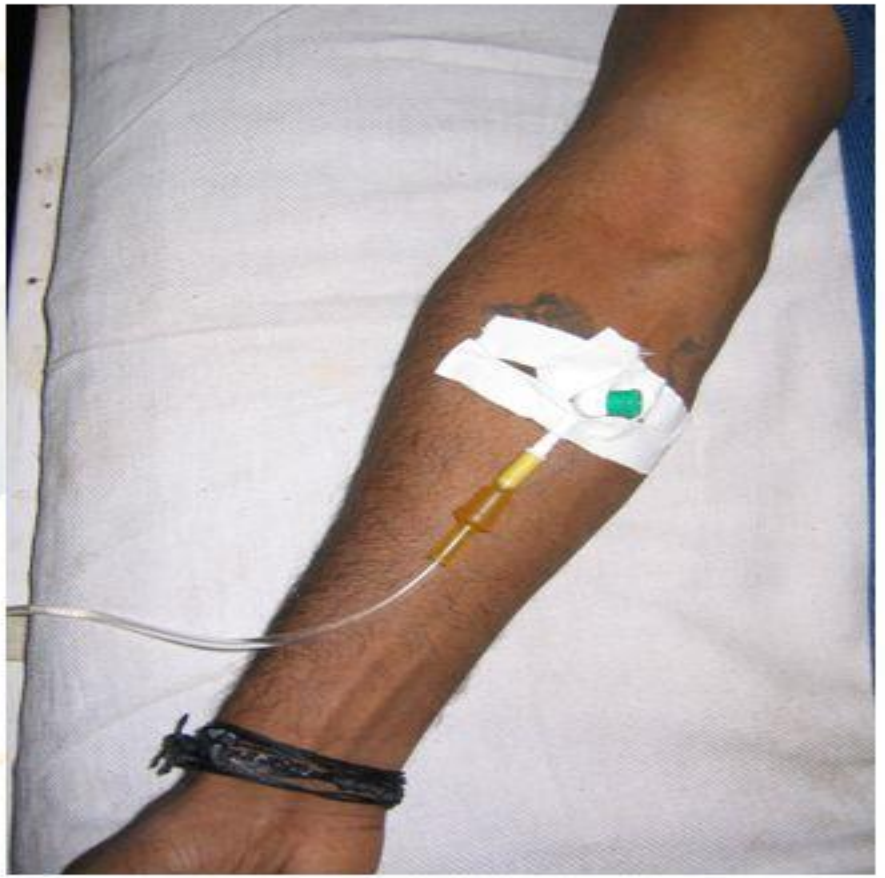
DEFINITION:Aseptic technique means using practices and procedures to prevent contamination from pathogens. It involves applying the strictest rules to minimize the risk of infection. Healthcare workers use aseptic technique in surgery rooms, clinics, outpatient care centers, and other health care settings.

Aseptic Technique

- Use aseptic technique for brief invasive procedures that may break skin or mucous membranes, or normally sterile parts of the body
- Example: placing a urinary catheter, suctioning, placing an IV, emptying a ICD drain



Examples of When Clean Technique is Used

- Clean tech is appropriate for:
  - Taking blood pressures
  - Examining patients
  - Feeding patients

ASEPTIC TECHNIQUE

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- Keeping the environment as clean as possible is always important in preventing infections. However, some situations call for aseptic technique while others call for clean techniques.

- Healthcare providers learn both aseptic and clean techniques as part of their training. The goal of the aseptic technique is to eliminate germs entirely. The goal of the clean technique is to reduce the number of germs whenever possible. Clean techniques are important for all healthcare providers and their patients because they prevent infections every day.

- Examples of clean techniques include washing hands and putting on clean gloves when needed. Healthcare providers keep a patient's surroundings as clean as possible, but they aren't using sterile items or aseptic technique.

- Healthcare professionals commonly use clean techniques when they're:

- giving an injection
- emptying a urinary catheter drainage bag
- giving a bed bath
- inserting a peripheral IV (an IV in a smaller vein)
- removing a peripheral IV
- removing a urinary catheter

ASEPTIC TECHNIQUE

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APPLICATION OF ASEPTIC TECHNIQUE (INTRAVENOUS THERAPY,URINARY CATHETERIZATION,RESPIRATORY EQUI PRACTICES

Aseptic technique –all invasive procedures proper aseptic technique must be observed

RESPIRATORY CARE

- is no medical contrainelevate the head of the bed of a patient at high risk for aspiration pneumonia, e.g., a patient receiving mechanically assisted ventilation and/or who has an enteral tube in place, at an angle of 30-45 degrees.
- Periodically drain and discard any condensate that collects in the tubing of a mechanical ventilator, taking precautions not to allow condensate to drain toward the patient. Decontaminate hands with soap and water or a waterless antiseptic agent after performing the procedure or after handling the fluid.
- dication, If available, use an endotracheal tube with a dorsal lumen above the endotracheal cuff to allow drainage (by continuous suctioning) of tracheal secretions that accumulate in the patient's subglottic area.
- Use sucralfate, H2-blockers, and/or antacids interchangeably for stress- bleeding prophylaxis in a patient receiving mechanically assisted ventilation
- alone decrease gastric acidity and increase gastric colonization and increases the susceptibility to respiratory infections).

RESPIRATORY CARE

- Instruct preoperative patients, especially those at high risk of contracting pneumonia, regarding taking deep breaths and ambulating as soon as medically indicated in the postoperative period. High-risk patients include those who will have an abdominal, thoracic, head, or neck operation or who have substantial pulmonary dysfunction.
- Follow manufacturers' instructions for use and maintenance of wall oxygen humidifiers unless data show that modifying the instructions pose no threat to the patient and are cost-effective.
- Between patients, change the tubing, including any nasal prongs or mask used to deliver oxygen from a wall outlet.
- Small-volume medication nebulizers: "in-line" and hand-held nebulizers: Between treatments on the same patient, disinfect; rinse with sterile or pasteurized water; and air-dry small-volume in-line or hand-held medication nebulizers.
- Use only sterile or pasteurized fluid for nebulization and dispense the fluid into the nebulizer aseptically.
- If multi-dose medication vials are used, then handle, dispenseand store them according to manufacturers' instructions using sterile techniques.

VENTILATOR-ASSOCIATED PNEUMONIA (VAP) EVENT:

- A pneumonia where the patient was on mechanical ventilation for >2 calendar days on the date of event, with day of ventilator placement being day 1 and the ventilator was in place on the date of event or the day before.
- VAP is not monitored after the patient is discharged from the facility.

- ***CATHETER-ASSOCIATED URINARY TRACT INFECTION (CAUTI) EVENT:***

- A UTI where an indwelling urinary catheter was in place for >2 calendar days on the date of the event, with day of device placement being Day 1 AND An indwelling urinary catheter was in place on the date of event or the day before. If an indwelling urinary catheter was in place for >2 calendar days and then removed, the date of event for the UTI must be the day of discontinuation or the next day for the UTI to be catheter-associated.

SPECIMENS FOR CULTURING SHOULD NOT BE CULTURED FROM URINE BAGS

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- Specimens should not be collected from the tap from the main collecting chamber of the catheter bag as colonization and multiplication of bacteria within the stagnant urine or around the drainage tap may have occurred

SSI

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- The SSI is an infection that occurs within 30 days (superficial incisional SSI) or within **30 or 90 days (**for Deep Incisional SSI and Organ/Space) after an operative procedure that involves the skin or subcutaneous tissue (superficial incisional SSI), deep soft tissue (deep incisional SSI), or any other part of the body that is opened or manipulated during the operative procedure (organ/space SSI

MDROS

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DEFINITIONS

- MDROs are bacteria that are resistant to many or all available antibiotics.
- Methicillin-Resistant Staphylococcus Aureus (MRSA) and Vancomycin-Resistant
- Enterococci (VRE) are important resistant microorganisms encountered in the hospital;
- Extended Spectrum Beta-lactamases (ESBLs) and Carbapenem-Resistant
- Enterobacteraceae (CRE) are among primary resistant microorganisms of significant
- concern in the healthcare setting and are endemic in many hospitals of the GCC countries.
- Proper attention to these pathogens is critical to curtail further emergence of these highly

  resistant organisms.

- Multidrug resistant organisms (**MDRO**) are defined as bacteria that have become resistant
- to more than one class of antimicrobial agents and usually are resistant to all but one or two
- commercially available antimicrobial agents,
-

- **POLICIES**
- Standard precautions must be observed for all patient care.
- Initiate **CONTACT** precautions in addition to standard precautions.
- Microbiology lab will notify the ward and Infection Prevention and Control (IP&C)
- Department of the MDROs

MERSCOV

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- MIDDLE East Respiratory Syndrome (MERS) is a viral respiratory disease caused by a novel corona virus (Middle East Respiratory Syndrome **CORONAVIRUS**, or MERS-CoV) that was first identified in Saudi Arabia in 2012.
- Typical MERS-CoV symptoms include fever, cough and shortness of breath. Pneumonia is common, but not always present. Approximately 35% of reported patients with MERS-CoV have died.
- Although some of human cases of MERS-CoV have been attributed to human-to-human infections in health care settings, current scientific evidence indicates that camels are a major reservoir host for MERS-CoV and an animal source of MERS-CoV infection in humans


thank you